DATABASE MANAGEMENT SYSTEM-MINI PROJECT

ON

TRANSPORT MANAGEMENT SYSTEM

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE & ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY AND SCIENCES

(UGC AUTONOMOUS)

(Permanently Affiliated to AU, Approved by AICTE and Accredited by NBA & NAAC with A+)

Sangivalasa, Bheemili Mandal, Visakhapatnam - 531162. (A.P)

2024-2025

Submitted By

Bhaskara Suraj	A23126510133
Gadi Sai Eswar Reddy	A23126510140
Kundeti Aravind Akhiram	A23126510157
Pandala Praneeth	A23126510169

BONAFIDE CERTIFICATE

This is to certify that the Mini-Project entitled " TRANSPORT MANAGEMENT SYSTEM " is developed as a part of DBMS curriculum in Computer Science and Engineering of II/IV CSE at Anil Neerukonda Institute of Technology & Sciences (ANITS)., Visakhapatnam is a record of Bonafide work carried out under my supervision

Submitted By

Bhaskara Suraj (A23126510133)

Gadi Sai Eswar Reddy (A23126510140)

Kundeti Aravind Akhiram (A23126510157)

Pandala Praneeth (A23126510169)

Faculty-Incharge	**Head Of The Department -CSE**
Mrs. K.Rachitha	**Dr G.Srinivas**
Assistant Proffessor	**ANITS**

ACKNOWLEDGEMENT

The completion of this project, titled "TRANSPORT MANAGEMENT SYSTEM" is the result of collaborative effort, dedication, and guidance of all the team members. This Mini Project is developed as a part of DBMS curriculum in Computer Science and Engineering of II/IV CSE at Anil Neerukonda Institute of Technology & Sciences (ANITS). This project represents a hands-on approach to understanding and implementing the principles of database management systems in a practical setting.

The satisfaction that accompanies the successful completion of any task would be incomplete without mentioning the people who made it possible, and whose constant guidance and encouragement always upheld the morale. We take great pleasure in presenting the project, which is the result of a studied blend of both research and knowledge.

We first take the privilege to thank the Head of our Department, Dr. G. Srinivas sir , for permitting us to lay the first stone of success.

We feel grateful to thank Mrs. K. Rachitha madam, who is our project guide and who shared her valuable knowledge with us, helping us understand the real essence of the topic. She inspired us to put our continuous efforts into the project.

1.ABSTRACT

In the rapidly evolving educational landscape, the efficient and secure management of transportation-related information is critical to the smooth operation of academic institutions. This project presents the design and development of a **Transport Management System (TMS)** using a robust **Database Management System (DBMS)** to streamline and automate the processes associated with student transport services. The system aims to provide a reliable, user-friendly, and scalable solution for managing transport logistics within educational environments.

Objectives and Scope:

The primary objective of the Transport Management System is to automate and manage key transportation operations such as **vehicle allocation, route planning, driver scheduling, student pickup/drop details, and fare management**. Additionally, the system offers secure login access for administrators, staff, and students, enabling real-time communication and notifications regarding transport updates. The scope of this project includes the **design, implementation, and deployment** of a centralized platform that ensures data consistency, minimizes redundancy, and enhances operational transparency.

System Design:

The system architecture is based on a centralized DBMS that effectively stores and manages all transport-related data. It consists of well-integrated modules for **student-vehicle assignment, route and stop management, driver information tracking, fee collection, and notification services**. The user interface is intuitive and designed to accommodate the roles of **administrators, transport managers, drivers, and students**. Each module interacts dynamically with the database to facilitate accurate, realtime data handling and ensure smooth operation across all user levels.

Features

1.Student Transport Registration:

- Allows students to register for transportation services.
- Collects route preferences and pickup/drop details.

2.Route and Stop Management

- Administrators can define, add, or modify transport routes and stops.
- Efficient mapping of students to the nearest stops.

3.Vehicle Allocation

- Assigns students to appropriate vehicles based on capacity and route.
- Ensures balanced load distribution and optimal route usage.

4.Driver Management

- Stores and manages driver details, license validity, and assignments.
- Tracks attendance and performance of drivers.

5.Transport Fee Management

- Calculates and tracks transport fees based on route distance or zones.
- Enables online/offline payment tracking.

- Live Tracking (optional with GPS integration).Allows tracking of vehicle movement for safety and transparency (if GPS is implemented).

6.Report Generation

- Generates reports on vehicle usage, fee collection, student usage stats, and driver logs.

7.Role-based Login System

- Secure authentication for administrators, drivers, and students.
- Access control to ensure data privacy and integrity.

Outcomes:

The Transport Management System improves operational efficiency by automating transport-related tasks like student registration, route assignment, and fee collection. It reduces manual errors and ensures data accuracy through a centralized database. Real-time updates and notifications enhance communication between administrators, students, and parents. The system supports better decision-making with detailed reporting and tracking features. It also ensures safety by managing driver details and optimizing routes. Overall, it saves time, lowers costs, and enhances the reliability of institutional transport operations.

CONTENTS

3. INTRODUCTION

The Transport Management System is designed to streamline student transportation in educational institutions. It automates key tasks, reduces manual errors, and improves communication between students, parents, and administrators for a safer and more efficient transport experience.

Purpose and Objective

1. **Centralized Data Management**: Establish a unified database system to efficiently manage all transport-related data, reducing redundancy and enhancing data accessibility.
2. **Efficient Record Handling**: Streamline the storage, retrieval, and updating of transport details, student assignments, vehicle routes, and schedules.
3. **Data Integrity and Security**: Ensure consistency and accuracy using relational database features such as foreign keys and constraints, with secure access for authorized users only.
4. **Enhanced Decision Making**: Provide accurate, real-time data to support informed and timely decisions by school administrators and transport coordinators.

Tables Used:

1. **Students Table:** Stores comprehensive student information, including personal details, contact data, and enrolment history.

2. **Courses Table:** Holds details about each course, such as course name, credit hours, and the professor responsible.

3. **Enrolments Table:** Tracks which students are enrolled in which courses, along with their grades and enrolment dates.

4. **Classrooms Table:** Manages data about physical classrooms, including room numbers, seating capacity, and building locations.

5. **Course Schedule Table:** Maintains course timetables by recording the scheduled days, times, and assigned classrooms.

Database Design:

1. **Database Schema:** A relational database schema is developed using MySQL, ensuring proper normalization to eliminate redundancy and improve efficiency. Tables are connected through well-defined relationships to support scalable data management.

2. **Data Management:** Core entities such as Students, Courses, Departments, Classrooms, and Schedules are represented through tables. Foreign keys are used to establish relationships and enforce data integrity across the system.

3. **Use Case Implementation:** SQL queries and operations are implemented to fulfil essential academic operations like retrieving student grades, assigning course schedules, managing enrolments, and generating detailed reports for departments and administration.

4. **Testing and Validation:** The database is thoroughly tested using sample datasets to validate table relationships, constraint rules, and the accuracy of query results. This ensures the system functions correctly under realistic scenarios.

4. REQUIREMENT ANALYSIS

Requirement analysis is a crucial phase in the development of the **Transport Management System**. It helps ensure that the final product aligns with the expectations of its users and stakeholders. This process involves identifying both **functional** and **non-functional requirements** that define the system's features, behaviour, and performance. It also outlines the scope and objectives of the system to ensure efficient and goal oriented implementation

PURPOSE

The **Transport Management System (TMS)** is a comprehensive solution designed to streamline and automate the management of transportation operations within an organization. It effectively handles various entities such as vehicles, drivers, routes, trips, passengers, and maintenance schedules, ensuring robust relational integrity among them.

It serves multiple stakeholders:

1.Transportation Managers:

- Role: Oversee fleet operations, route planning, and driver assignments.
- Responsibilities: Ensure efficient utilization of vehicles and drivers, monitor performance metrics, and implement strategies for cost reduction and service improvement.

2. Drivers:

- Role: Execute trips as per assigned schedules and routes.
- Responsibilities: Adhere to planned routes and schedules, report any issues encountered during trips, and maintain compliance with safety regulations.

3. Logistics Coordinators:

- Role: Manage the scheduling and dispatching of trips.
- Responsibilities: Coordinate between drivers, vehicles, and routes to ensure timely deliveries and pickups, and handle unforeseen changes or emergencies.

ENTITIES AND ATTRIBUTES:

1. Vehicles

- vehicle_id (Primary Key, Auto Increment)
- vehicle_number (Unique, String, NOT NULL)
- vehicle_type (String, e.g., Bus, Van, Mini-Bus)
- capacity (Integer)
- status (Enum: Active, In Maintenance, Inactive)

2. Drivers

- driver_id (Primary Key, Auto Increment)
- name (String, NOT NULL)
- license_number (Unique, String, NOT NULL)
- phone_number (String)
- address (Text)
- assigned_vehicle_id(Foreign key referencing

  Vehicles(vehicle_id))

3. Routes

- route_id (Primary Key, Auto Increment)
- route_name (String, NOT NULL)
- start_point (String)
- end_point (String)
- stops (Text, comma-separated or as a separate table)

4.Schedules

- schedule_id (Primary Key, Auto Increment)
- vehicle_id (Foreign Key referencing Vehicles(vehicle_id))
- driver_id (Foreign Key referencing Drivers(driver_id))
- route_id (Foreign Key referencing Routes(route_id))

- departure_time (Time)
- arrival_time (Time)
- day (Enum: Monday to Sunday)

5. Users (Admin/Staff)

- user_id (Primary Key, Auto Increment)
- username (String, NOT NULL, Unique)
- password (Encrypted)
- role (Enum: Admin, Dispatcher)

RELATIONSHIPS

1. **Drivers to Vehicles:** One-to-One
   - Each driver is assigned to a specific vehicle, and each vehicle is operated by a single driver.
2. **Vehicles to Routes:** Many-to-Many
   - A vehicle can serve multiple routes, and a route can be served by different vehicles (handled via the Schedule entity).
3. **Routes to Schedules:** One-to-Many
   - Each route can have multiple scheduled trips.
4. **Vehicles to Schedules:** One-to-Many
   - A vehicle can appear in multiple schedules (for different days/times/routes).
5. **Drivers to Schedules:** One-to-Many
   - A driver may have multiple scheduled trips.
6. **Users to System Access:** One-to-Many
   - Each user (admin or dispatcher) can perform multiple operations like adding schedules, routes, or vehicles.

FUNCTIONAL REQUIREMENTS

1. **Vehicles:** Add, update, delete, view, and search vehicle records including vehicle number, type, and capacity.
2. **Drivers:** Register, update, delete, and view driver profiles including license information and assigned vehicles.
3. **Routes:** Create, update, delete, and view transportation routes including start point, end point, and intermediate stops.
4. **Schedules:** Assign vehicles and drivers to specific routes with timings, update and manage daily/weekly schedules.
5. **Maintenance Logs:** Record, update, and track vehicle maintenance history for safety and compliance.
6. **Tracking & Status:** Monitor vehicle location and route completion status in real-time (optional if GPS is integrated).
7. **Validation:** Enforce data constraints such as unique vehicle IDs, valid schedule timings, and foreign key dependencies.
8. **Security:** Implement role-based access control for admins, drivers, and staff with logs for all operations.

CONSTRAINTS

1.Primary Keys: Unique identifiers for each table, such as vehicle_id, driver_id, route_id, and schedule_id to ensure each record is distinct.

2.Foreign Keys: Used to maintain referential integrity across the database. For example, vehicle_id and driver_id in the Schedules table reference the Vehicles and Drivers tables respectively.

3.Unique Constraints: Enforce uniqueness on fields like vehicle_number, driver_license_number, and combinations such as (route_id, schedule_time) in the Schedules table to prevent duplication.

ASSUMPTIONS

1.Vehicles are not double-assigned to overlapping schedules.

2.All drivers hold valid and current licenses.

3.Schedule entries are time-validated to avoid conflicts.

5.LOGICAL DESIGN

RELATIONSHIPS:

1. Vehicles - Assigned To – Routes:

- A vehicle can be assigned to multiple routes over time.
- Each route uses one specific vehicle per trip.

2. Drivers - Operate – Vehicles:

- A driver can operate multiple vehicles (one at a time).
- Each vehicle is driven by one driver per shift.

3. Routes - Have – Schedules:

- A route can have multiple schedules throughout the day/week.
- Each schedule is tied to one route and one vehicle.

4. Passengers - Book – Trips:

- A passenger can book multiple trips.
- Each trip booking is linked to one passenger and one scheduled route.

5. Maintenance Staff - Maintain – Vehicles:

- Maintenance staff can be assigned to maintain multiple vehicles.
- Each maintenance record belongs to one staff member and one vehicle.

6. Vehicles - Undergo – Maintenance:

- A vehicle can have multiple maintenance records.
- Each maintenance entry is tied to one vehicle and a specific date.

ENTITY RELATIONSHIP DIAGRAM :

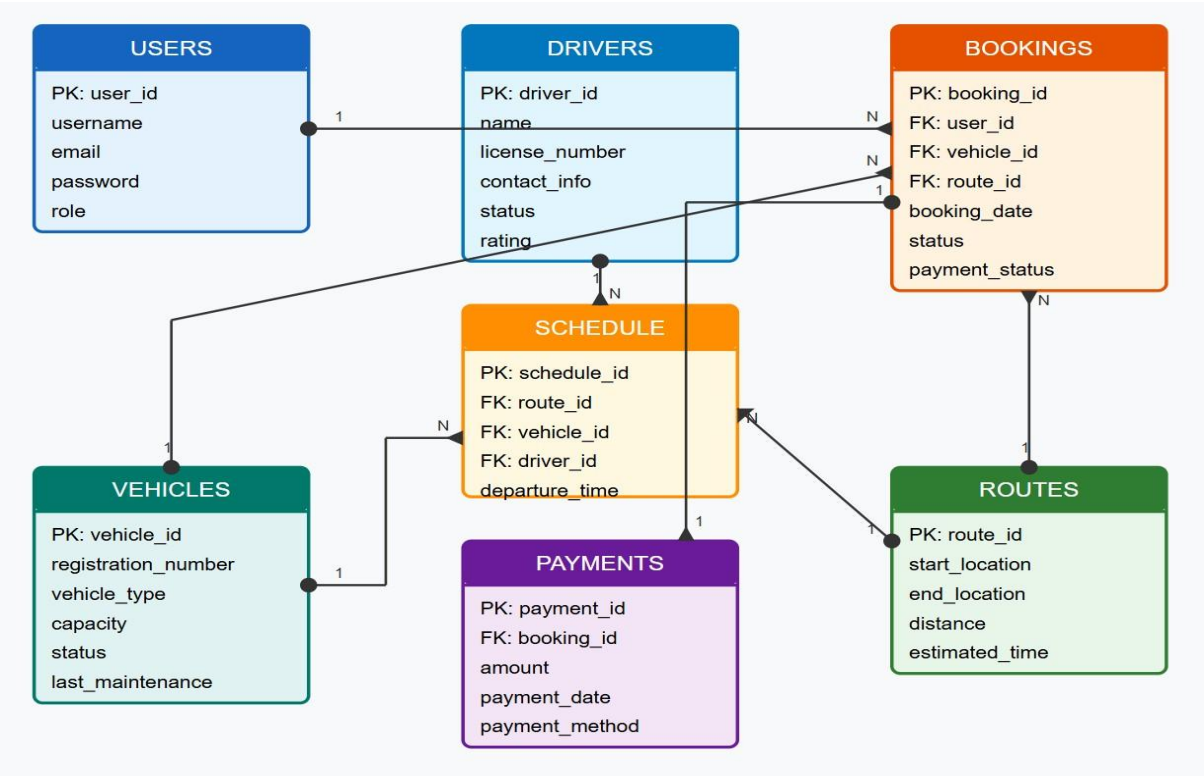


Fig: Entity Relationship Diagram of Student Management System

6.TABLES IMPLEMENTATION:

Vehicles Table:

CREATE TABLE Vehicles

(vehicle_id INT PRIMARY KEY

AUTO_INCREMENT,vehicle_number,VARCHAR(20)

UNIQUE NOT NULL, type VARCHAR (50)

NOT NULL,capacity INT NOT NULL,

status ENUM ('Available', 'In Service', 'Under Maintenance') DEFAULT 'Available'

);

Drivers Table:

CREATE TABLE Drivers (

driver_id INT PRIMARY KEY AUTO_INCREMENT,

name VARCHAR (100) NOT NULL,

license_number VARCHAR (50) UNIQUE NOT

NULL,phone_number VARCHAR (15),

address VARCHAR (255)

);

Routes Table

CREATE TABLE Routes (

route_id INT PRIMARY KEY AUTO_INCREMENT,

route_nameVARCHAR(100)NOTNULL,

start_location VARCHARNOT NULL,

end_location VARCHAR NOT NULL,

distance_km DECIMAL (6,2) NOT NULL);

Schedule Tables:

```
CREATE TABLE Schedules (
schedule_id INT PRIMARY KEY AUTO_INCREMENT,
 route_id INT,
vehicle_id INT,
departure_time DATETIME NOT NULL,
arrival_time DATETIME NOT NULL,
frequency VARCHAR (50),
   FOREIGN KEY (route_id) REFERENCES Routes(route_id),
   FOREIGN KEY (vehicle_id) REFERENCES Vehicles(vehicle_id)
);
```

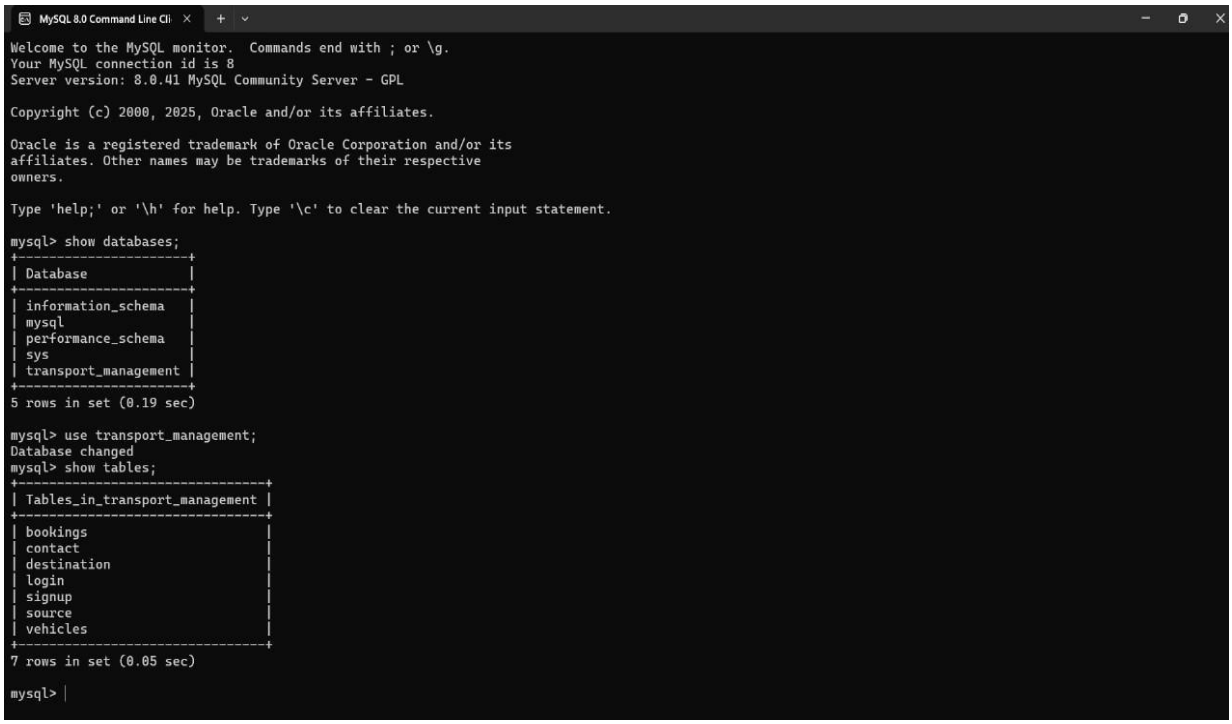
Passengers Table :

```
CREATE TABLE Passengers (passenger_id INT PRIMARY
KEY AUTO_INCREMENT, name VARCHAR (100) NOT
NULL, email VARCHAR (100) UNIQUE,
 phone_number VARCHAR (15),
address VARCHAR (255)
);
```

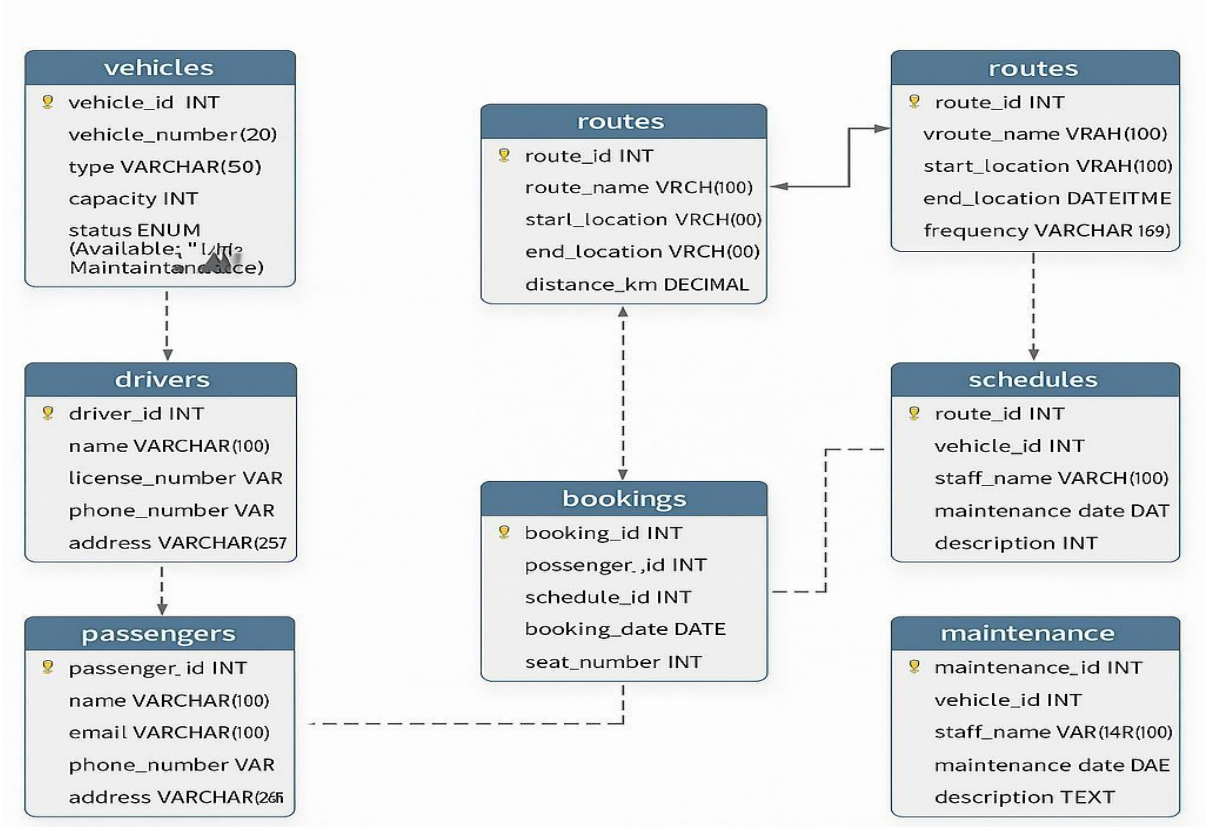
Booking Table

```
CREATE TABLE Bookings (
booking_id INT PRIMARY KEY AUTO_INCREMENT,
passenger_id INT,
 schedule_id INT,
 booking_date DATE NOT NULL,
  seat_number INT,
    FOREIGN KEY (passenger_id) REFERENCES Passengers(passenger_id),
    FOREIGN KEY (schedule_id) REFERENCES Schedules(schedule_id)
);
```

The Tables Created in the Data Base:



7.NORMALIZIATION :



Normalization ensures that a database minimizes redundancy and dependency issues. To check the normal forms (1NF, 2NF, 3NF) for each table, we follow these steps:

1.Identify the Primary Key: The attribute or combination of attributes that uniquely identify a record.

2.Check for 1NF: Ensure the table has atomic values, no repeating groups, and unique rows.

3.Check for 2NF: Ensure the table is in 1NF, and all non-prime attributes are fully functionally dependent on the primary key.

4.Check for 3NF: Ensure the table is in 2NF, and there are no transitive dependencies (non-key attributes depending on other non-key attributes).

Vehicles Table:

- **Schema:**
  vehicle_id (Primary Key, Auto Increment), vehicle_number, type, capacity, status
- **Primary Key:** vehicle_id
- **1NF:** All attributes contain atomic values with no repeating groups.
- **2NF:** All non-key attributes (vehicle_number, type, capacity, status) depend entirely on vehicle_id.
- **3NF:** No transitive dependencies exist; every non-key attribute is directly dependent on vehicle_id.

Drivers Table:

- **Schema:**
  driver_id (Primary Key, Auto Increment), name, license_number, phone_number, address
- **Primary Key:** driver_id
- **1NF:** All values are atomic.
- **2NF:** Every non-key attribute is fully dependent on driver_id.
- **3NF:** No transitive dependencies exist; the table is in 3NF.

Routes Table:

- **Schema:**
  route_id (Primary Key, Auto Increment), route_name, start_location, end_location, distance_km
- **Primary Key:** route_id
- **1NF:** Each field holds a single value.
- **2NF:** Non-key attributes (route_name, start_location, end_location, distance_km) fully depend on route_id.
- **3NF:** The table contains no transitive dependencies.

Schedules Table:

- **Schema:**
  schedule_id (Primary Key, Auto Increment), route_id (Foreign Key), vehicle_id (Foreign Key), departure_time, arrival_time, frequency
- **Primary Key:** schedule_id
- **1NF:** All attributes are atomic.
- **2NF:** Non-key attributes are fully dependent on schedule_id.
- **3NF:** No transitive dependencies exist; the table is in 3NF.

Passengers Table:

- **Schema:**
  passenger_id (Primary Key, Auto Increment), name, email, phone_number, address
- **Primary Key:** passenger_id
- **1NF:** Each field is atomic.
- **2NF:** All non-key attributes depend fully on passenger_id.
- **3NF:** The table is free from transitive dependencies.

Bookings Table:

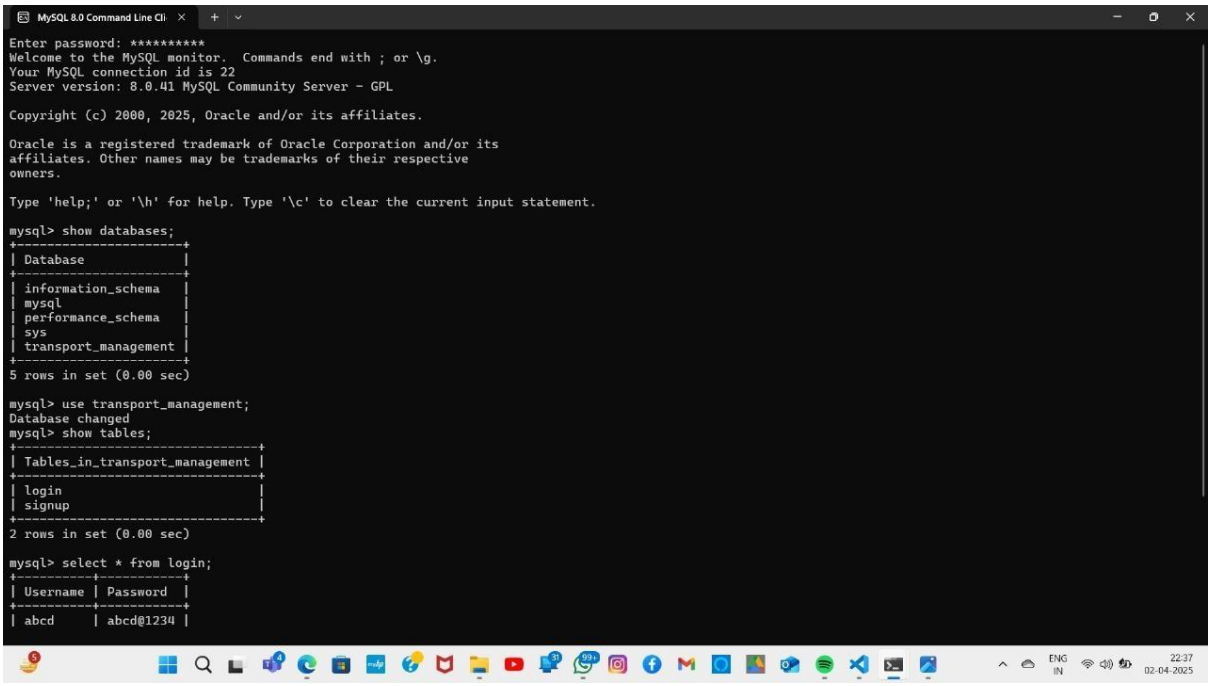
- **Schema:**
  booking_id (Primary Key, Auto Increment), passenger_id (Foreign Key), schedule_id (Foreign Key), booking_date, seat_number
- **Primary Key:** booking_id
- **1NF:** All values are atomic.
- **2NF:** All non-key attributes fully depend on booking_id.
- **3NF:** No transitive dependencies exist; the table is in 3NF.

All the tables in the **Transport Management System**—including Vehicles, Drivers, Routes, Trips, Students, and Attendance—are designed to be in **Third Normal Form (3NF)**. This normalization ensures that:

- Each attribute contains only atomic values (1NF). All non-key attributes are fully functionally dependent on the primary key (2NF).

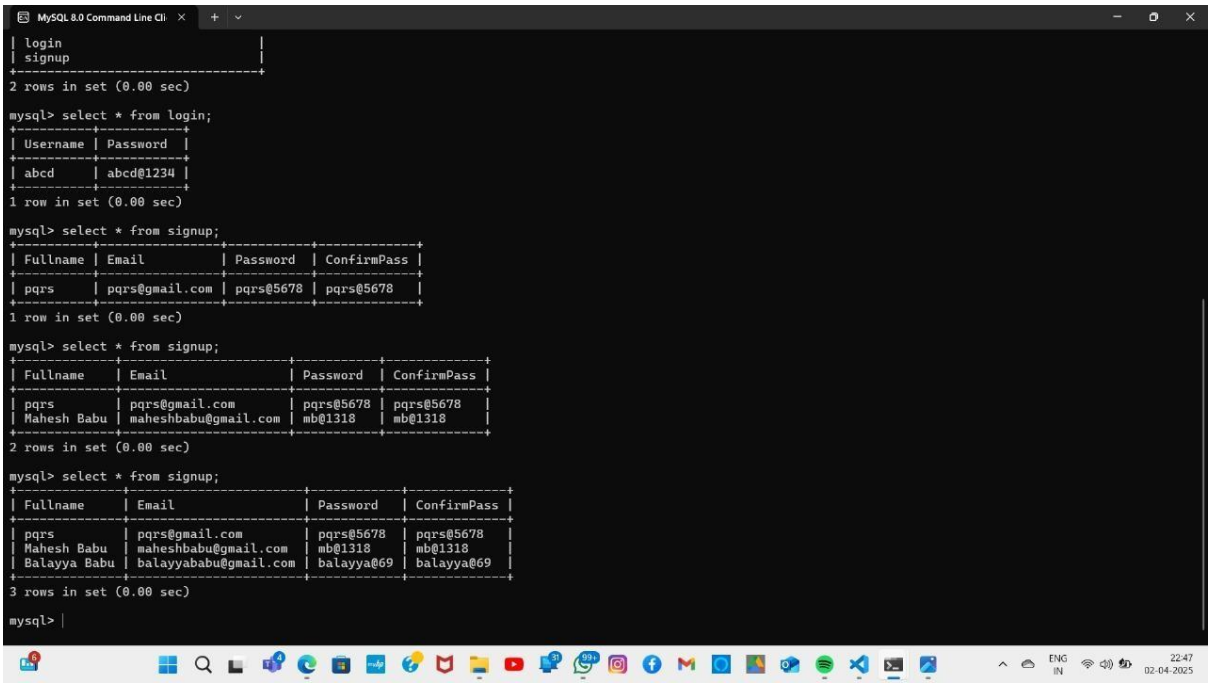
8.RESULTS

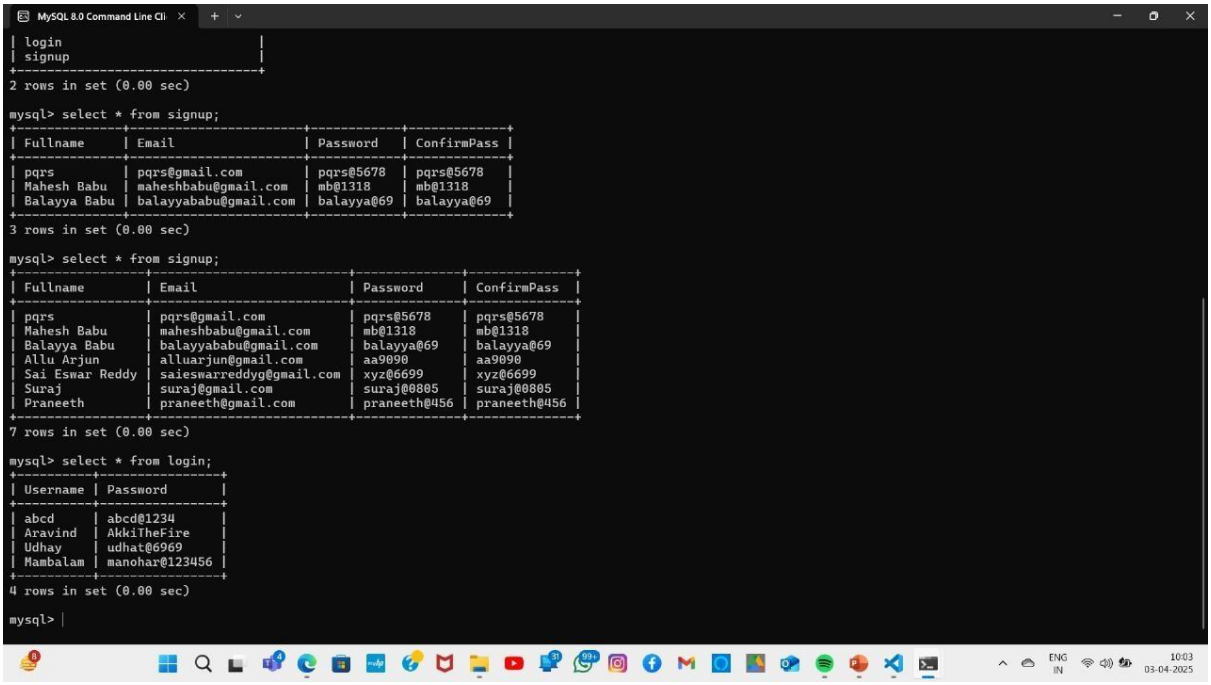
Data storing in login table:



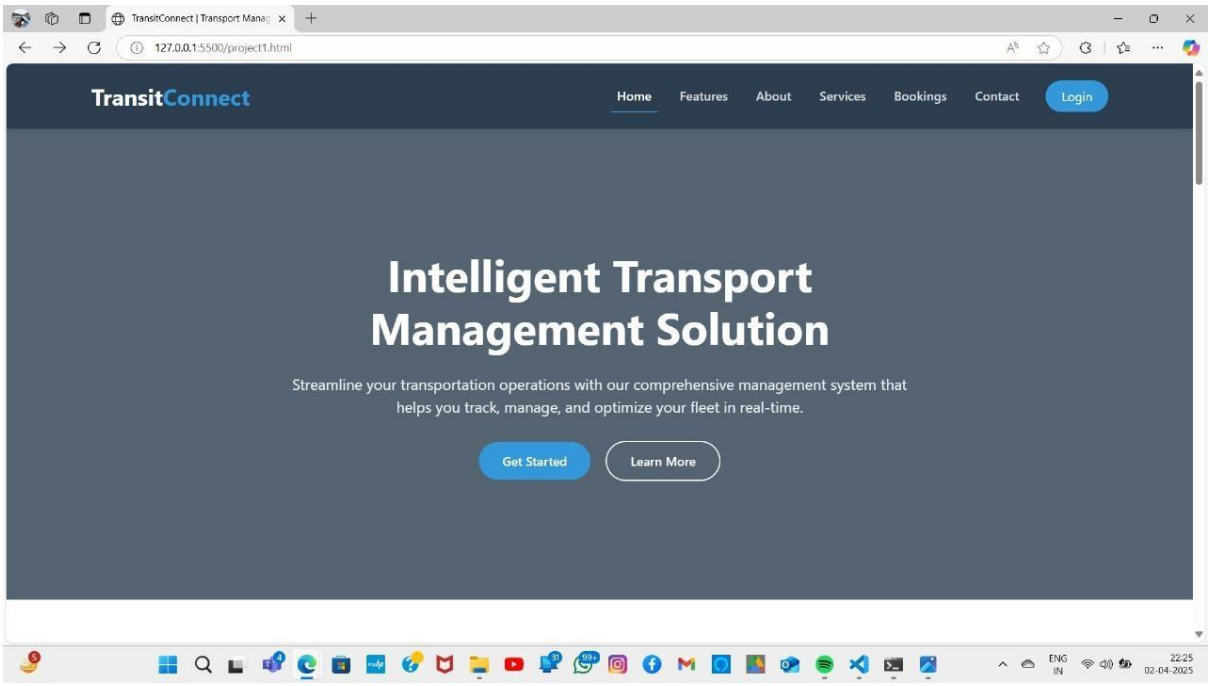
Connection to Mysql using Node js :

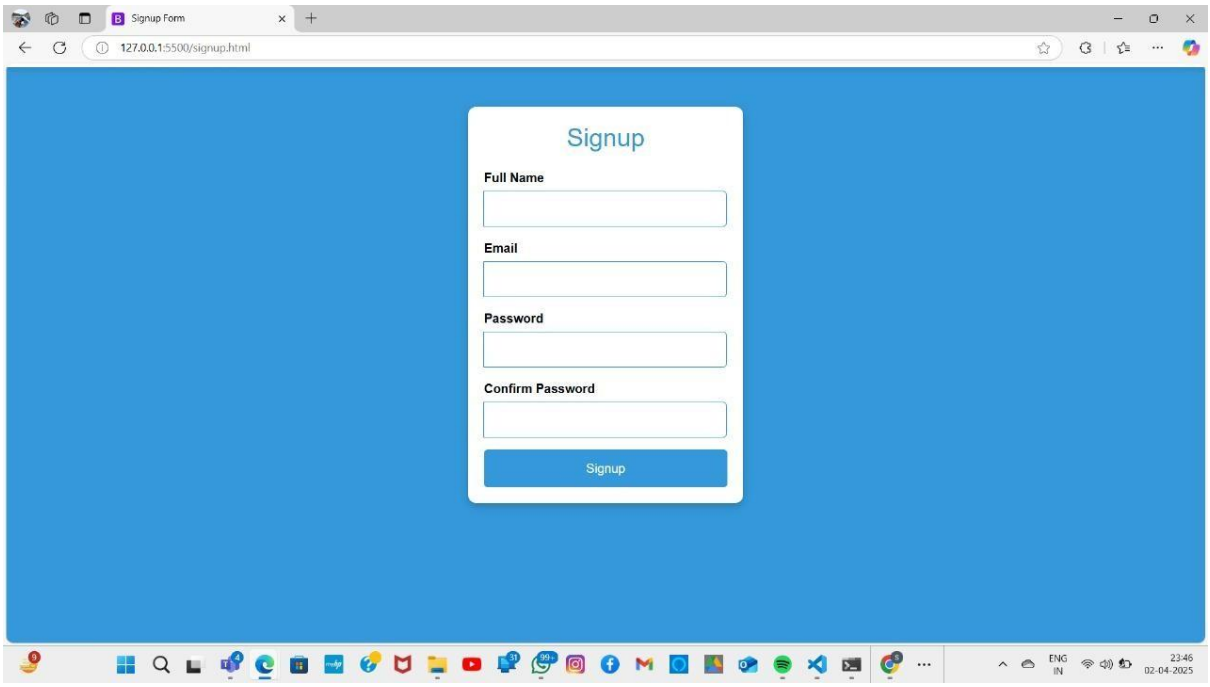
Data stored in the Sign Up:

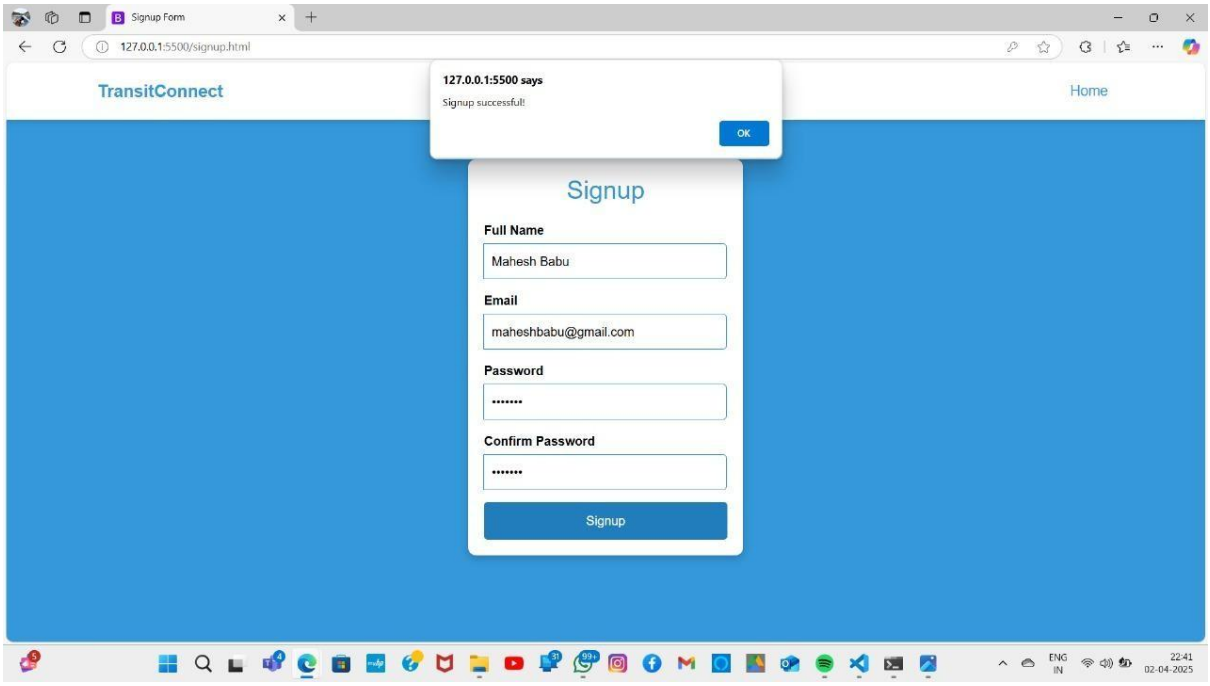


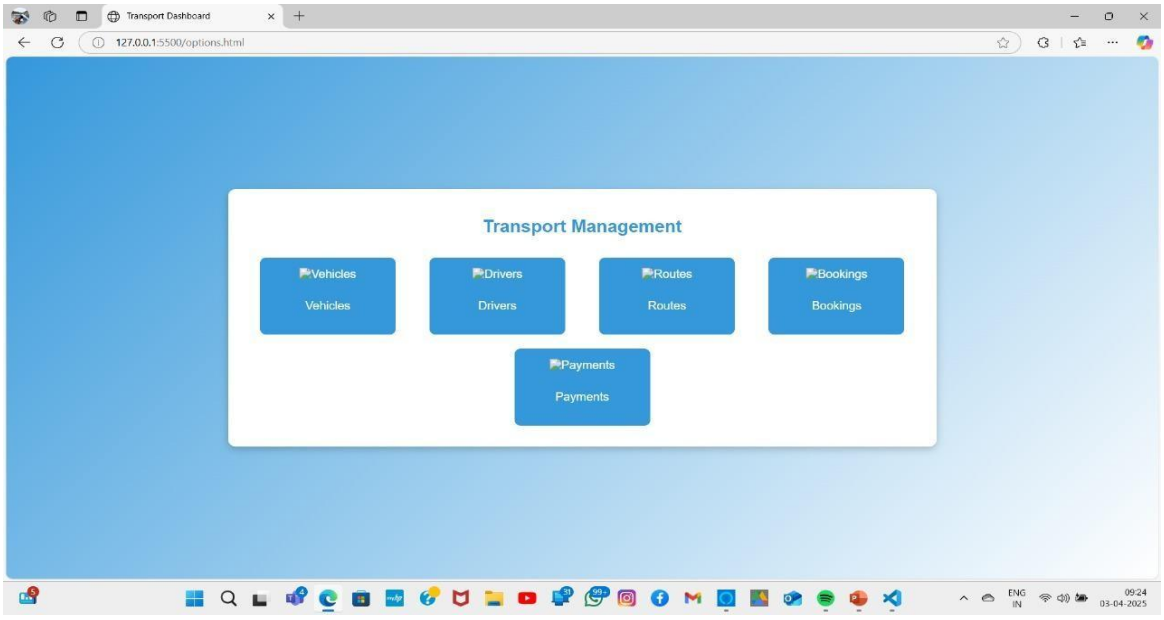


9.FRONT-END SAMPLE OUTPUTS






Signup Form
127.0.0.1:5500/signup.html
TransitConnect
Home
127.0.0.1:5500 says
Signup successful!
OK
Signup
Full Name
Mahesh Babu
Email
maheshbabu@gmail.com
Password
Confirm Password
Signup


Transport Dashboard
127.0.0.1:5500/options.html
Transport Management
Vehicles
Vehicles
Drivers
Drivers
Routes
Routes
Bookings
Bookings
Payments
Payments

The above web page is developed by html and css using java Script.

Index.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>TransitConnect | Transport Management System</title>
    <link
href="https://cdnjs.cloudflare.com/ajax/libs/bootstrap/5.3.0/css/bootstrap.min.cs
s" rel="stylesheet">
    <link
href="https://cdnjs.cloudflare.com/ajax/libs/fontawesome/6.4.0/css/all.min.css"
rel="stylesheet">
    <link rel="stylesheet" href="project1.css">
</head>
<body>
    <nav class="navbar navbar-expand-lg navbar-dark">
        <div class="container">
            <a class="navbar-brand" href="#">Transit<span>Connect</span></a>
            <button class="navbar-toggler" type="button" data-bs-toggle="collapse"
data-bs-target="#navbarNav">
                <span class="navbar-toggler-icon"></span>
            </button>
            <div class="collapse navbar-collapse" id="navbarNav">
                <ul class="navbar-nav ms-auto">
                    <li class="nav-item">
```

```
                    <a class="nav-link active" href="#">Home</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="#features">Features</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="#about">About</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="#services">Services</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="options.html">Bookings</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" href="contact.html">Contact</a>
                </li>
            </ul>
            <a href="login.html"><button class="btn btn-login ms-
3">Login</button></a>
        </div>
    </div>
</nav>
<section class="hero">
    <div class="container">
```

```
        <div class="hero-content">
            <h1>Intelligent Transport Management Solution</h1>
            <p>Streamline your transportation operations with our comprehensive management system that helps you track, manage, and optimize your fleet in real-time. < /p>
            <a href="login.html"> <button class="btn btn-primary">Get Started</button></a>
            <button class="btn btn-outline">Learn More</button>
        </div>
    </div>
  </section>
  <section class="features" id="features">
    <div class="container">
      <h2 class="section-title">Key Features</h2>
      <div class="row">
        <div class="col-md-4 mb-4">
          <div class="feature-box">
            <div class="feature-icon">
              <i class="fas fa-route"></i>
            </div>
            <h3 class="feature-title">Route Optimization</h3>
            <p>Optimize routes to reduce travel time, fuel consumption, and operational costs with our intelligent algorithm. < /p>
          </div>
        </div>
        <div class="col-md-4 mb-4">
          <div class="feature-box">
```

```
                <div class="feature-icon">
                    <i class="fas fa-truck"></i>
                </div>
                <h3 class="feature-title">Fleet Management</h3>
                <p>Track and manage your entire fleet with comprehensive tools for maintenance scheduling, driver assignments, and vehicle analytics.</p>
            </div>
        </div>
        <div class="col-md-4 mb-4">
            <div class="feature-box">
                <div class="feature-icon">
                    <i class="fas fa-chart-line"></i>
                </div>
                <h3 class="feature-title">Real-time Analytics</h3>
                <p>Make data-driven decisions with real-time insights into operations, performance metrics, and financial analytics.</p>
            </div>
        </div>
        <div class="col-md-4 mb-4">
            <div class="feature-box">
                <div class="feature-icon">
                    <i class="fas fa-mobile-alt"></i>
                </div>
                <h3 class="feature-title">Mobile Accessibility</h3>
                <p>Access your transport management system anytime, anywhere with our responsive mobile application.</p>
```

```
            </div>
          </div>
          <div class="col-md-4 mb-4">
            <div class="feature-box">
              <div class="feature-icon">
                <i class="fas fa-shield-alt"></i>
              </div>
              <h3 class="feature-title">Security & Compliance</h3>
              <p>Ensure regulatory compliance and maintain security with our advanced protection and documentation features.</p>
            </div>
          </div>
          <div class="col-md-4 mb-4">
            <div class="feature-box">
              <div class="feature-icon">
                <i class="fas fa-users"></i>
              </div>
              <h3 class="feature-title">Driver Management</h3>
              <p>Efficiently manage driver schedules, performance, licensing, and training records in one central system.</p>
            </div>
          </div>
        </div>
      </div>
    </section>
    <!-- About Section -->
```

```
<section class="about" id="about">
    <div class="container">
        <div class="row align-items-center">
            <div class="col-lg-6">
                <div class="about-img">
                    <img src="truck-digital-art-illustration.jpg" alt="About
TransitConnect">
                </div>
            </div>
            <div class="col-lg-6">
                <div class="about-content">
                    <h2>Revolutionizing Transport Management</h2>
<p>TransitConnect is a comprehensive transport management system designed
to help businesses streamline operations, reduce costs, and improve efficiency.
Our platform combines cutting-edge technology with userfriendly interfaces to
deliver a solution that transforms how you manage your transportation
needs.</p>
                    <ul class="list-unstyled">
                        <li><i class="fas fa-check-circle check-icon"></i> Reduce
operational costs by up to 30%</li>
                        <li><i class="fas fa-check-circle check-icon"></i> Improve
fleet utilization and efficiency</li>
                        <li><i class="fas fa-check-circle check-icon"></i> Enhance
driver safety and compliance</li>
                        <li><i class="fas fa-check-circle check-icon"></i> Streamline
maintenance scheduling</li>
                        <li><i class="fas fa-check-circle check-icon"></i> Real-time
tracking and reporting</li>
                    </ul>
```

```
                <button class="btn btn-primary">Discover More</button>
            </div>
        </div>
    </div>
</section>
<section class="stats">
    <div class="container">
        <div class="row">
            <div class="col-md-3 col-6">
                <div class="stat-box">
                    <div class="stat-number">500+</div>
                    <div class="stat-label">Happy Clients</div>
                </div>
            </div>
            <div class="col-md-3 col-6">
                <div class="stat-box">
                    <div class="stat-number">15,000+</div>
                    <div class="stat-label">Vehicles Managed</div>
                </div>
            </div>
            <div class="col-md-3 col-6">
                <div class="stat-box">
                    <div class="stat-number">25M+</</div>
                    <div class="stat-label">Miles Optimized</div>
```

```
                </div>
            </div>
            <div class="col-md-3 col-6">
                <div class="stat-box">
                    <div class="stat-number">98%</div>
                    <div class="stat-label">Customer Satisfaction</div>
                </div>
            </div>
        </div>
    </div>
</section>
<!-- Services Section -->
<section class="services" id="services">
    <div class="container">
        <h2 class="section-title">Our Services</h2>
        <div class="row">
            <div class="col-lg-4 col-md-6">
                <div class="service-card">
                    <div class="service-icon">
                        <i class="fas fa-map-marked-alt"></i>
                    </div>
                    <h3 class="service-title">Route Planning & Optimization</h3>
                    <p>Advanced algorithms to plan and optimize routes for
maximum efficiency, reduced fuel consumption, and improved delivery
times.</p>
                </div>
```

```
            </div>
            <div class="col-lg-4 col-md-6">
                <div class="service-card">
                    <div class="service-icon">
                        <i class="fas fa-truck-loading"></i>
                    </div>
                    <h3 class="service-title">Load Management</h3>
                    <p>Efficiently manage load distribution, optimize cargo
placement, and ensure maximum utilization of vehicle capacity.</p>
                </div>
            </div>
            <!-- Add more service cards as needed -->
        </div>
    </div>
</section>
<!-- Footer Section -->
<footer class="footer bg-dark text-white">
    <div class="container">
        <div class="row">
            <div class="col-md-4">
                <h4>About TransitConnect</h4>
                <p>TransitConnect is a comprehensive transport management
system designed to help businesses streamline operations, reduce costs, and
improve efficiency. Our platform combines cutting-edge technology with
userfriendly interfaces to deliver a solution that transforms how you manage
your transportation needs.</p>
            </div>
```

```
            <div class="col-md-4">
                <h4>Quick Links</h4>
                <ul class="list-unstyled">
                    <li><a href="#" class="text-white">Home</a></li>
                    <li><a href="#features" class="text-white">Features</a></li>
                    <li><a href="#about" class="text-white">About</a></li>
                    <li><a href="#services" class="text-white">Services</a></li>
                    <li><a href="contact.html" class="text-white">Contact</a></li>
                    <li><a href="login.html" class="text-white">Login</a></li>
                </ul>
            </div>
            <div class="col-md-4">
                <h4>Contact Us</h4>
                <ul class="list-unstyled">
                    <li><i class="fas fa-map-marker-alt"></i> 1234 Street Name,
City, State, 12345</li>
                    <li><i class="fas fa-phone-alt"></i> (123) 456-7890</li>
                    <li><i class="fas fa-envelope"></i>
info@transitconnect.com</li>
                </ul>
            </div>
        </div>
        <div class="row mt-4">
            <div class="col text-center">
                <p>&copy; 2025 TransitConnect. All Rights Reserved.</p>
            </div>
```

```
            </div>
        </div>
    </footer>
    <!-- Bootstrap JS -->
    <script
src="https://cdnjs.cloudflare.com/ajax/libs/bootstrap/5.3.0/js/bootstrap.bundle.m
in.js"></script>
    <script src="script.js"></script>
</body>
</html>
```

Style.css :

```
:root {
        --primary: #2c3e50;
        --secondary: #3498db;
        --accent: #e74c3c;
        --light: #ecf0f1;
        --dark: #2c3e50;
    }
    body {
        font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
        color: #333;
        background-color: #f8f9fa;
    }
    .navbar {
        background-color: var(--primary);
        box-shadow: 0 2px 10px rgba(0, 0, 0, 0.1);
        padding: 15px 0;
    }
    .navbar-brand {
        font-weight: 700;
        color: white !important;
        font-size: 1.8rem;
    }
    .navbar-brand span {
        color: var(--secondary);
```

```
}
.nav-link {
    color: rgba(255, 255, 255, 0.8) !important;
    font-weight: 500;
    margin: 0 10px;
    transition: all 0.3s;
}
.nav-link:hover {
    color: white !important;
    transform: translateY(-2px);
}
        .nav-link.active {
    color: white !important;
    border-bottom: 2px solid var(--secondary);
}
.btn-login {
    background-color: var(--secondary);
    color: white;
    border: none;
    padding: 8px 20px;
    border-radius: 50px;
    transition: all 0.3s;
}
.btn-login:hover {
    background-color: #2980b9;
```

```
        transform: translateY(-2px);
        box-shadow: 0 4px 8px rgba(0, 0, 0, 0.1);
    }
        .hero {
        background: linear-gradient(rgba(44, 62, 80, 0.8), rgba(44, 62, 80, 0.8)),
url('/api/placeholder/1920/1080') center/cover no-repeat;
        height: 600px;
        color: white;
        display: flex;
        align-items: center;
        text-align: center;
    }
    .hero-content {
        max-width: 800px;
        margin: 0 auto;
    }
    .hero h1 {
        font-size: 3.5rem;
        font-weight: 700;
        margin-bottom: 25px;
    }
    .hero p {
        font-size: 1.2rem;
        margin-bottom: 30px;
        opacity: 0.9;
```

```
}
.btn-primary {
    background-color: var(--secondary);
    border: none;
    padding: 12px 30px;
    border-radius: 50px;
    font-weight: 600;
    margin-right: 15px;
    transition: all 0.3s;
}
.btn-primary:hover {
    background-color: #2980b9;
    transform: translateY(-3px);
    box-shadow: 0 6px 12px rgba(0, 0, 0, 0.15);
}
.btn-outline {
    border: 2px solid white;
    background-color: transparent;
    color: white;
    padding: 12px 30px;
    border-radius: 50px;
    font-weight: 600;
    transition: all 0.3s;
}
.btn-outline:hover {
```

```
    background-color: white;
    color: var(--primary);
    transform: translateY(-3px);
    box-shadow: 0 6px 12px rgba(0, 0, 0, 0.15);
}
.features {
    padding: 100px 0;
    background-color: white;
}
.section-title {
    font-size: 2.5rem;
    font-weight: 700;
    margin-bottom: 60px;
    text-align: center;
    position: relative;
    color: var(--primary);
}
.section-title:after {
    content: '';
    position: absolute;
    width: 80px;
    height: 4px;
    background-color: var(--secondary);
    bottom: -15px;
    left: 50%;
```

```
    transform: translateX(-50%);
}
.feature-box {
    text-align: center;
    padding: 30px;
    border-radius: 10px;
    background-color: white;
    box-shadow: 0 10px 30px rgba(0, 0, 0, 0.05);
    transition: all 0.3s;
    height: 100%;
}
.feature-box:hover {
    transform: translateY(-10px);
    box-shadow: 0 15px 35px rgba(0, 0, 0, 0.1);
}
.feature-icon {
    font-size: 2.5rem;
    margin-bottom: 25px;
    color: var(--secondary);
    background-color: rgba(52, 152, 219, 0.1);
    width: 80px;
    height: 80px;
    line-height: 80px;
    border-radius: 50%;
    display: inline-block;
```

```
}

.feature-title {
    font-size: 1.5rem;
    font-weight: 600;
    margin-bottom: 15px;
    color: var(--primary);
}
.about {
    padding: 100px 0;
    background-color: #f8f9fa;
}
.about-img {
    border-radius: 10px;
    overflow: hidden;
    box-shadow: 0 15px 35px rgba(0, 0, 0, 0.1);
}
        .about-img img {
    width: 100%;
    height: auto;
    transition: all 0.5s;
}
.about-img:hover img {
    transform: scale(1.05);
}
```

```
.about-content h2 {
    font-size: 2.2rem;
    font-weight: 700;
    margin-bottom: 25px;
    color: var(--primary);
}
        .about-content p {
    margin-bottom: 20px;
    line-height: 1.8;
    color: #555;
}
.stat-label {
    font-size: 1.1rem;
    text-transform: uppercase;
    letter-spacing: 1px;
}
.services {
    padding: 100px 0;
    background-color: white;
}

.service-card {
    padding: 30px;
    border-radius: 10px;
    margin-bottom: 30px;
```

```
    box-shadow: 0 10px 30px rgba(0, 0, 0, 0.05);
    transition: all 0.3s;
    border-bottom: 3px solid transparent;
}

.service-card:hover {
    transform: translateY(-10px);
    box-shadow: 0 15px 35px rgba(0, 0, 0, 0.1);
    border-bottom: 3px solid var(--secondary);
}

.service-icon {
    font-size: 2rem;
    color: var(--secondary);
    margin-bottom: 20px;
}

.service-title {
    font-size: 1.5rem;
    font-weight: 600;
    margin-bottom: 15px;
    color: var(--primary);
}

.testimonials {
```

```
    padding: 100px 0;
    background-color: #f8f9fa;
}

.testimonial-card {
    background-color: white;
    padding: 30px;
    border-radius: 10px;
    box-shadow: 0 10px 30px rgba(0, 0, 0, 0.05);
    margin: 15px;
    text-align: center;
}
.contact-details h5 {
    font-weight: 600;
    margin-bottom: 5px;
    color: var(--primary);
}
.copyright {
    padding: 25px 0;
    background-color: rgba(0, 0, 0, 0.1);
    margin-top: 50px;
    text-align: center;
    color: rgba(255, 255, 255, 0.7);
}
.dashboard-table td {
```

```
        padding: 15px;
        border-bottom: 1px solid #eee;
    }

    .dashboard-table tr:hover {
        background-color: rgba(52, 152, 219, 0.05);
    }

    .status-badge {
        display: inline-block;
        padding: 5px 10px;
        border-radius: 20px;
        font-size: 0.8rem;
        font-weight: 600;
    }

    .status-active {
        background-color: rgba(46, 204, 113, 0.1);
        color: #2ecc71;
    }

    .status-pending {
        background-color: rgba(241, 196, 15, 0.1);
        color: #f1c40f;
}
```

```
.status-inactive {
    background-color: rgba(231, 76, 60, 0.1);
    color: #e74c3c;
}
/* Media Queries */
@media (max-width: 991px) {
    .hero {
        height: 500px;
    }
    .hero h1 {
        font-size: 2.8rem;
    }
            .about-img {
        margin-bottom: 30px;
    }
}
@media (max-width: 767px) {
    .hero {
        height: 450px;
        text-align: center;
      .hero h1 {
        font-size: 2.2rem;
    }.hero p {
        font-size: 1rem;
    }
```

Database js :

```
const mysql = require("mysql2")

const db = mysql.createConnection({
    host: "localhost",
    user: "root",
    password: "eswar@2005",
    database: "transport_management"
})

db.connect((err) => {
    if (err) {
        console.error("Database Connection Failed: " +
err.message);
    } else {
        console.log("Connected to MySQL Database!");
    }
});

module.exports = db;
```

Server js :

```
const express = require("express");
const cors = require("cors");
const bodyParser = require("body-parser");
const db = require("./db"); // Import database connection

const app = express();
app.use(cors());
app.use(bodyParser.json());

// ◇ API to save Sign In form data
app.post("/signin", (req, res) => {
   const { username, password } = req.body;
   if (!username || !password) {
      return res.status(400).json({ message: "All fields are required" });
   }
   const sql = "INSERT INTO login (Username, Password) VALUES (?, ?)";
   db.query(sql, [username, password], (err, result) => {
      if (err) {
         console.error("Error inserting sign-in data:", err);
         return res.status(500).json({ message: "Error signing in" });
      }
      res.status(200).json({ message: "Sign-in successful" });
   });
});

// ◇ API to save Signup form data
app.post("/signup", (req, res) => {
   const { fullname, email, password, confirmpass } = req.body;

   if (!fullname || !email || !password || !confirmpass) {
      return res.status(400).json({ message: "All fields are required" });
   }
```

```
    if (password !== confirmpass) {
        return res.status(400).json({ message: "Passwords do not match" });
    }
    const sql = "INSERT INTO signup (Fullname, Email, Password, Confirmpass)
VALUES (?, ?, ?, ?)";
    db.query(sql, [fullname, email, password, confirmpass], (err, result) => {
        if (err) {
            console.error("Error inserting signup data:", err);
            return res.status(500).json({ message: "Error signing up" });
        }
        res.status(200).json({ success: true, message: "Signup successful" });
    });
});
// ◇ CONTACT FORM API (Saves Form Data to Database)
app.post("/contact", (req, res) => {
    const { name, email, message } = req.body;

    if (!name || !email || !message) {
        return res.status(400).json({ message: "All fields are required" });
    }
    const sql = "INSERT INTO contact (Name, Email, Message) VALUES (?, ?,
?)";
    db.query(sql, [name, email, message], (err, result) => {
        if (err) {
            console.error("❌ Error inserting contact form data:", err);
            return res.status(500).json({ message: "Error saving contact form data"
});
        }
        res.status(201).json({ success: true, message: "Message sent successfully!"
});
    });
});

// API to fetch vehicle types
app.get("/api/vehicles", (req, res) => {
```

```
    db.query("SELECT Vehicle_type FROM vehicles", (err, results) => {
        if (err) {
            console.error("Error fetching vehicles:", err);
            res.status(500).send("Server error");
        } else {
            res.json(results);
        }
    });
});

// ☑ API to get Source Cities
app.get("/api/source", (req, res) => {
    const sql = "SELECT City FROM source";
    db.query(sql, (err, result) => {
        if (err) {
            console.error("Error fetching source cities:", err);
            return res.status(500).json({ message: "Error fetching source cities" });
        }
        res.status(200).json(result);
    });
});

// ☑ API to get Destination Cities
app.get("/api/destination", (req, res) => {
    const sql = "SELECT City FROM destination";
    db.query(sql, (err, result) => {
        if (err) {
            console.error("Error fetching destination cities:", err);
            return res.status(500).json({ message: "Error fetching destination cities"
});
        }
        res.status(200).json(result);
    });
});
```

```
// API to Handle Booking Submission
app.post("/api/book", (req, res) => {
   const { userName, mobileNumber, vehicleType, capacity, routeFrom, routeTo, paymentOption } = req.body;

   const query = "INSERT INTO bookings (User_name, Mobile_no, Vehicle_type, Capacity, Source, Destination, Payment_opt) VALUES (?, ?, ?, ?, ?, ?, ?)";

   db.query(query, [userName, mobileNumber, vehicleType, capacity, routeFrom, routeTo, paymentOption], (err, result) => {
      if (err) {
         console.error("Error inserting data:", err);
         res.status(500).json({ message: "Booking failed!" });
      } else {
         res.status(200).json({ message: "Booking successful!" });
      }
   });
});


// Start the server
app.listen(5000, () => {
   console.log("Server running on port 5000");
});
```

CONCLUSION:

The **Transport Management System (TMS)** is a comprehensive, databasedriven solution designed to efficiently manage various facets of transportation operations within an organization. By employing a normalized database structure, the system ensures data integrity, reduces redundancy, and supports scalability.

Below are the key components and their functionalities:

Key Features:

1. **Vehicles Table:**
    - **Purpose:** Centralized repository for all vehicle-related information, including vehicle number, type, capacity, and operational status.
    - **Functionality:** Ensures each vehicle is uniquely identifiable, facilitating effective tracking and maintenance scheduling.
2. **Drivers Table:**
    - **Purpose:** Stores essential details about drivers such as name, license number, contact information, and address.
    - **Functionality:** Maintains a comprehensive record of driver credentials and contact details, aiding in assignment and compliance monitoring.
3. **Routes Table:**
    - **Purpose:** Defines the various routes serviced, capturing start and end locations, route names, and distances.
    - **Functionality:** Supports route planning and optimization by providing detailed route information.www.slideshare.net+2Course Hero | Own the study hour+2ResearchGate+2
4. **Trips Table:**
    - **Purpose:** Manages the scheduling and execution of trips, linking vehicles, drivers, and routes with specific departure and arrival times.

- **Functionality:** Facilitates efficient trip planning and real-time tracking of transportation activities.MDPI+1Academia+1

5. **Passengers Table:**
    - **Purpose:** Maintains records of passengers, including personal details and contact information.MDPI
    - **Functionality:** Enables personalized services and efficient management of passenger-related operations.
6. **Bookings Table:**
    - **Purpose:** Records booking details, associating passengers with specific trips, including booking dates and seat assignments. ResearchGate+2MDPI+2Course Hero | Own the study hour+2
    - **Functionality:** Ensures accurate reservation management and prevents overbooking through unique constraints.
7. **Maintenance Table:**
    - **Purpose:** Tracks maintenance activities for each vehicle, detailing service dates, descriptions, and responsible personnel.
    - **Functionality:** Supports proactive maintenance scheduling and maintains a history of vehicle servicing for compliance and safety.

REFERENCES

1. https://dev.mysql.com/doc/
2. https://learn.microsoft.com/en-us/office/troubleshoot/access/databasenormalization-description
3. https://www.simplilearn.com/tutorials/mysql-tutorial/mysql-workbench
4. https://medium.com/@tushar0618/how-to-create-er-diagram-of-adatabase-in-mysql-workbench-209fbf63fd03
5. https://www.w3schools.com/mysql/mysql_rdbms.asp